

**Listing of Claims:**

1. (Currently Amended) A transmission state indicating method for a predetermined transmission system, by SONET (Synchronous Optical Network)/SDH (Synchronous Digital Hierarchy), in which high capacity data is divided into a plurality of low capacity virtual containers and transmitted via a plurality of channels which configure a communication network by the SONET/SDH based on clocks at the respective channels, the method comprising:

~~acquiring a multiplexed frame in which mapping, accompanying delay absorption processings corresponding to assembling a plurality of frames back into a multiplexed frame, wherein the plurality of frames are received in accordance with transmission states at the respective channels, has been carried out and wherein the assembling is performed~~ based on a reference clock with respect to virtual containers at the respective channels included in [(a)] the plurality of frames including the plurality of low capacity virtual containers;

successively detecting factors at the respective channels which are respectively included in the plurality of frames ~~included~~ contained in the multiplexed frame, and which are to be objects for delay absorption processings corresponding to the transmission states at the respective channels, as a plurality of

pointer values indicating a variation in phase or transmission delay during transmission at said plurality of channels which  
25 configure the communication network by the SONET/SDH; and

~~successively correcting the plurality of pointer values based on variations in phases at the respective channels which are detected from phase differences between the clocks at the respective channels and the reference clock; and~~

30 indicating the plurality of pointer values successively ~~corrected~~ detected, at the same time, corresponding to the plurality of channels.

2. (Original) The transmission state indicating method according to claim 1, further comprising:

storing said plurality of pointer values in association with information for indicating said plurality of pointer values at  
5 the same time in accordance with said plurality of channels; and

reading out the plurality of pointer values stored in association with the information for indicating the plurality of pointer values corresponding to the plurality of channels, at the same time.

3. (Original) The transmission state indicating method according to claim 1, further comprising:

carrying out processing for indicating said plurality of  
pointer values by relative values with respect to a pointer value  
5 of a reference channel to be a reference among said plurality of  
channels when said plurality of pointer values are indicated at  
the same time corresponding to the plurality of channels.

4. (Previously Presented) The transmission state indicating  
method according to claim 1, wherein the plurality of pointer  
values include, as factors of the respective channels to be  
objects for the delay absorption processings, values of AU  
5 (Administrative Unit) pointers included in H1 bytes and H2 bytes  
which have been defined to show head portions of the virtual  
containers in case where the low capacity containers are  
contained in a payload, at the 4<sup>th</sup> row of an SOH (Section  
Overhead) frame in which the plurality of frames are frames of an  
10 STM (Synchronous transfer mode) and which is added to the payload  
of the frame of the STM.

5. (Previously Presented) The transmission state indicating  
method according to claim 1, wherein the plurality of pointer  
values include, as factors of the respective channels to be  
objects for the delay absorption processings, a value of H4 byte  
5 which has been defined at the 6<sup>th</sup> row of a POH (Pass Overhead)  
added to head portions of the respective virtual containers in

case where said plurality of frames are frames of an STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4 format.

6. (Previously Presented) The transmission state indicating method according to claim 1, wherein the plurality of pointer values include, as factors of the respective channels to be the objects for the delay absorption processings, values of AU (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4<sup>th</sup> row of an SOH (Section Overhead) frame in which said plurality of frames are frames of an STM (Synchronous transfer mode) and which is added to the payload of the frame of the STM, and a value of H4 byte which has been defined at the 6<sup>th</sup> row of a POH (Pass Overhead) added to the head portions of the respective virtual containers in case where said plurality of frames are frames of the STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4 format.

7. (Currently Amended) The transmission state indicating method according to claim 1, further comprising:

converting the multiplexed frame ~~on which mapping has been~~  
~~carried out~~ into a concatenation mapping frame according to ~~the~~  
5 rules of concatenation mapping; and

detecting a plurality of index values included in the  
concatenation mapping frame converted according to the rules of  
the concatenation mapping in place of the multiplexed frame ~~on~~  
~~which mapping has been carried out.~~

8. (Currently Amended) A transmission state indicating  
apparatus for a predetermined transmission system by SONET  
(Synchronous Optical Network)/SDH (Synchronous Digital  
Hierarchy), in which high capacity data is divided into a  
5 plurality of low capacity virtual containers and transmitted via  
a plurality of channels which configure a communication network  
by the SONET/SDH based on clocks at the respective channels, the  
apparatus comprising:

a frame assembling unit which assembles a plurality of  
10 frames back into a multiplexed frame, wherein the plurality of  
frames are received in accordance with a multiplexed frame  
~~acquiring unit which acquires a multiplexed frame in which~~  
~~mapping, accompanying delay absorption processings corresponding~~  
~~to transmission states at the respective channels, has been~~  
15 ~~carried out~~ and wherein the assembling by the frame assembling  
unit is performed based on a reference clock with respect to the

virtual containers at the respective channels included in [[a]]  
the plurality of frames including said plurality of low capacity  
virtual containers;

20 a pointer value detecting unit which successively detects  
factors at the respective channels ~~which~~ that are respectively  
included in the plurality of channels included in the multiplexed  
frame ~~acquired by the multiplexed frame acquiring unit~~ assembled  
by the frame assembling unit, and ~~which~~ that are to be objects  
25 for delay absorption processings corresponding to the  
transmission states at the respective channels, as a plurality of  
pointer values indicating a variation in phase or transmission  
delay during transmission at the plurality of channels which  
configure the communication network by the SONET/SDH, ~~and which~~  
30 ~~successively corrects the plurality of pointer values based on~~  
~~variations in phases at the respective channels to be detected~~  
~~from phase differences between the clocks at the respective~~  
~~channels and the reference clock; and~~

a display unit which indicates the plurality of pointer  
35 values successively detected ~~and corrected~~ by the pointer value  
detecting unit, at the same time, corresponding to the plurality  
of channels.

9. (Currently Amended) The transmission state indicating  
apparatus according to claim 8, further comprising:

a storage unit which stores said plurality of pointer values successively detected ~~and corrected~~ by the pointer value  
5 detecting unit in association with information for indicating the plurality of pointer values at the same time in accordance with the plurality of channels; and

a control unit which reads said plurality of pointer values stored in association with the information for indicating said  
10 plurality of pointer values corresponding to the plurality of channels at the storage unit, at the same time.

10. (Currently Amended) The transmission state indicating apparatus according to claim 8, further comprising:

a control unit which carries out processing for indicating the plurality of pointer values successively detected ~~and~~  
5 ~~corrected~~ by the pointer value detecting unit, by relative values with respect to a pointer value of a reference channel to be a reference among the plurality of channels in the case where said plurality of pointer values are indicated at the same time corresponding to the said plurality of channels.

11. (Currently Amended) The transmission state indicating apparatus according to claim 8, wherein the plurality of pointer values include, ~~as factors of the respective channels to be~~  
~~objects for the delay absorption processings,~~ values of AU

5 (Administrative Unit) pointers included in H1 bytes and H2 bytes  
which have been defined to show head portions of the virtual  
containers in case where the low capacity containers are  
contained in a payload, at the 4<sup>th</sup> row of an SOH (Section  
Overhead) frame in which the plurality of frames are frames of an  
10 STM (Synchronous transfer mode) and are added to payloads of the  
frames of the STM.

12. (Currently Amended) The transmission state indicating  
apparatus according to claim 8, wherein the plurality of pointer  
values include, ~~as factors of the respective channels to be~~  
~~objects for the delay absorption processings,~~ a value of H4 byte  
5 which has been defined at the 6<sup>th</sup> row of a POH (Pass Overhead)  
added to head portions of the respective virtual containers in  
case where the plurality of frames are frames of an STM  
(Synchronous transfer mode) and the virtual containers included  
in the frames of the STM system are a VC-3 format or a VC-4  
10 format.

13. (Currently Amended) The transmission state indicating  
apparatus according to claim 8, wherein the plurality of pointer  
values include, ~~as factors of the respective channels to be~~  
~~objects for the delay absorption processings,~~ values of AU  
5 (Administrative Unit) pointers included in H1 bytes and H2 bytes



which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4<sup>th</sup> row of an SOH (Section Overhead) frame in which said plurality of frames are frames of an STM (Synchronous transfer mode) and are added to the payload of the frame of the STM, and a value of H4 byte which has been defined at the 6<sup>th</sup> row of a POH (Pass Overhead) added to the head portions of the respective virtual containers when the plurality of frames are frames of the STM (Synchronous transfer mode) and the virtual containers included in the frames of the STM are a VC-3 format or a VC-4 format.

14. (Currently Amended) The transmission state indicating apparatus according to claim 8, further comprising:

a frame converting unit which converts the multiplexed frame ~~acquired~~ assembled by the ~~multiplexed~~ frame ~~acquiring~~ assembling unit into a concatenation mapping frame according to ~~the~~ rules of concatenation mapping; and

an index value detecting unit which detects a plurality of index values included in the concatenation mapping frame converted according to the rules of the concatenation mapping by the frame converting unit.

15. (Currently Amended) A transmission state indicating apparatus for a predetermined transmission system by SONET (synchronous Optical Network)/SDH (synchronous digital Hierarchy), in which high capacity data is divided into a plurality of low capacity virtual containers and transmitted via a plurality of channels which configure a communication network by the SONET/SDH based on clocks at the respective channels, the apparatus comprising:

a plurality of clock reproducing units which reproduce the clocks of the respective channels from reception signals of a plurality of frames including the plurality of low capacity virtual containers;

a plurality of frame receiving units which receive the plurality of frames including the plurality of low capacity virtual containers in which the high capacity data is divided into the plurality of low capacity virtual containers and transmitted via the plurality of channels which configure the communication network by the SONET/SDH, corresponding to the plurality of the respective channels, and detect the virtual containers at the respective channels based on the clocks of the respective channels reproduced by the plurality of clock reproducing units;

a reference clock generating unit which generates a reference clock;

25           a frame assembling unit which assembles the plurality of  
frames back into a multiplexed frame in accordance with  
transmission states of the respective channels and based on the  
reference clock from the reference clock generating unit ~~which~~  
~~carries out mapping~~ with respect to the virtual containers at the  
30   respective channels included in the plurality of the frames  
received corresponding to the plurality of channels by the  
plurality of frame receiving units, ~~based on the reference clock~~  
~~from the reference clock generating unit, accompanying delay~~  
~~absorption processings corresponding to the transmission states~~  
35 ~~of the respective channels, so as to be produce a multiplexed~~  
~~frame;~~

          a pointer value detecting unit which successively detects  
factors at the respective channels ~~which~~ that are respectively  
included in the plurality of frames ~~included~~ contained in the  
40   multiplexed frame assembled ~~on which mapping has been carried out~~  
by the frame assembling unit, and ~~which~~ that are to be objects  
for delay absorption processings corresponding to the  
transmission states at the respective channels, as a plurality of  
pointer values indicating a variation in phase or transmission  
45   delay during ~~the~~ transmission at the plurality of channels which  
configure the communication network by the SONET/SDH, and which  
successively ~~corrects~~ detects the plurality of pointer values  
based on variations in phases at the respective channels to be

detected from phase differences between the clocks at the  
50 respective channels reproduced by the plurality of clock  
reproducing units and the reference clock generated by the  
reference clock generating unit;

an information storage unit which stores the plurality of  
pointer values successively detected ~~and corrected~~ by the pointer  
55 value detecting unit in association with information for  
indicating the plurality of pointer values in accordance with the  
plurality of channels; and

a display unit which indicates, at the same time, the  
plurality of pointer values for respectively evaluating the  
60 transmission states of the plurality of channels which configure  
the communication network by the SONET/SDH, corresponding to the  
plurality of channels, based on the plurality of pointer values  
and the information for indicating the plurality of pointer  
values corresponding to the plurality of channels which have been  
65 stored in association with one another in the information storage  
unit.

16. (Original) The transmission state indicating apparatus  
according to claim 15, further comprising:

a control unit which carries out processing for indicating  
the plurality of pointer values by relative values with respect

5 to a pointer value of a reference channel to be a reference among the plurality of channels on the display unit.

17. (Previously Presented) The transmission state indicating apparatus according to claim 15, wherein the plurality of pointer values include, as factors of the respective channels to be objects for the delay absorption processings, values of AU (Administrative Unit) pointers included in H1 bytes and H2 bytes which have been defined to show head portions of the virtual containers in case where the low capacity containers are contained in a payload, at the 4<sup>th</sup> row of an SOH (Section Overhead) frame in which the plurality of frames are frames of an STM (Synchronous transfer mode) and are added to the payload of the frame of the STM.

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18. (Previously Presented) The transmission state indicating apparatus according to claim 15, wherein the plurality of pointer values include, as factors of the respective channels to be objects for the delay absorption processings, a value of H4 byte which has been defined at the 6<sup>th</sup> row of a POH (Pass Overhead) added to head portions of the respective virtual containers in case where the plurality of frames are frames of an STM (Synchronous transfer mode) and the virtual containers

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included in the frames of the STM are a VC-3 format or a VC-4  
10 format.

19. (Previously Presented) The transmission state  
indicating apparatus according to claim 15, wherein the plurality  
of pointer values include, as factors of the respective channels  
to be objects for the delay absorption processings, values of AU  
5 (Administrative Unit) pointers included in H1 bytes and H2 bytes  
which have been defined to show head portions of the virtual  
containers in case where the low capacity containers are  
contained in a payload, at the 4<sup>th</sup> row of an SOH (Section  
Overhead) frame in which the plurality of frames are frames of an  
10 STM (Synchronous transfer mode) and are added to the payload of  
the frame of the STM, and a value of H4 byte which has been  
defined at the 6<sup>th</sup> row of a POH (Pass Overhead) added to the head  
portions of the respective virtual containers in case where said  
plurality of frames are frames of the STM (Synchronous transfer  
15 mode) and the virtual containers included in the frames of the  
STM are a VC-3 format or a VC-4 format.

20. (Currently Amended) The transmission state indicating  
apparatus according to claim 15, further comprising:

a frame converting unit which converts the multiplexed frame  
~~on which mapping has been carried out~~ assembled by the frame

5 assembling unit into a concatenation mapping frame according to rules of concatenation mapping; and

an index value detecting unit which detects a plurality of index values included in the concatenation mapping frame converted according to the rules of the concatenation mapping by the frame converting unit.